Unnamed Brook
Lamprey River Watershed
New Hampshire

Drown's Dam - Break Flood Delineations

July 1990

US Army Corps of Engineers
New England Division

DROWNS DAM
DAM-BREAK FLOOD ANALYSIS

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1. PURPOSE AND SCOPE

This report is a continuation of a dam-break flood analysis, on Drown's Dam, completed by the U.S. Army Corps of Engineers, dated September, 1984. The dam is located in Nottingham, New Hampshire. The study's objective is to delineate and quantify the extent of the probable inundation flood area in the event of a dam-break failure, and to make such information available for use in emergency planning. This study was not performed because of any known likelihood of a dam-break at Drowns Dam. It is owned, operated and maintained by the Water Resources Board of New Hampshire. This study is limited to the accuracy of ten foot contour mapping.

Delineations were continued downstream to a point at which the inundation from a dam-break approximates that of a one-hundred year storm event. The limits of this study are shown on Plate 2.

2. AUTHORITY

Authority for U.S. Army Corps of Engineers participation in this effort is sanctioned by Section 206 of the 1960 Flood Control Act (Public Law 86-645) which states:

> "... The Secretary of the Army, through the Chief of Engineers, Department of the Army, is hereby authorized to compile and disseminate information on floods and flood damages, including identification of areas subject to inundation by floods of various magnitudes and frequencies, and general criteria for guidance in the use of floodplain areas and to provide engineering advice to local interests for their use in planning to ameliorate the flood hazard..."

3. DAM DESCRIPTION

Identification No.	NH00136
Name of Dam:	Drown's Dam
Town:	Nottingham
County and State:	Rockingham County, NH
Stream:	Tributary of Bean River

Drown's Dam is located in Nottingham, New Hampshire (Plate 1). It is 18 feet high, averages 24 feet in width, and is 235 feet long. It is an earthen embankment contained between two vertical dry masonry (stone) walls. A concrete facing was placed on the upstream face in three different years: 1946, 1964, and 1972. The dam has four sections of spillway, 21 feet long, placed on either side of a four-foot-wide stoplog spillway, and a 50-foot-wide emergency grass covered spillway in the left (west) abutment. Drown's Dam, Dollof Dam and Grove Dike impound Pawtuckaway Pond. The pond is now used for recreational purposes. It is three miles long, and has a surface area of about 900 acres. Maximum storage is 11,700 acre-feet.

4. PERTINENT DATA

Data is taken from "Phase I Inspection Report" for Drown's Dam dated July 1978.

a. Drainage Area

The drainage area consists of 20.66 square miles (13,225 acres) of predominantly wooded terrain.

b. Discharge at Dam Site

(1) Outlet works (conduits): None

(2) Maximum known flood at damsite is unknown.

(3) Ungated spillway capacity at maximum pool elevation - 520 cfs at elevation 252.7 feet NGVD.

(4) Stoplog spillway capacity at recreational pool elevation (250 NGVD) is estimated to be 300 cfs assuming removal of all stoplogs.

(5) Stoplog capacity at maximum pool elevation - 450 cfs at elevation 252.7 feet NGVD

(6) Total spillway capacity at maximum pool elevation - 970 cfs at elevation 252.7 feet NGVD

c. Elevation (feet NGVD)

(1) Top of dam:	254.9
(2) Recreation pool:	250
(3) Spillway crest (gated):	241 (assuming all stoplogs are removed)
(4) Streambed at centerline of dam:	240 - Downstream at toe of stoplog spillway.

d. Reservoir

(1) Length of recreation pool:	3 miles

e. Storage (Acre-Feet)

(1) Recreation pool:	11,500
(2) Top of dam:	11,700 (storage based on Dollof Dam).

f. Reservoir Surface (Acres)

(1)	Top of dam:	1130
(2)	Maximum Pool:	980
(3)	Recreational Pool:	900
(4)	Spillway crest:	420

g. Dam

(1)	Type	Earthen embankment between vertical dry masonry walls, upstream wall is concrete faced.
(2)	Length	235 feet
(3)	Height	18 feet (structural height)
(4)	Top Width	24 feet
(5)	Side Slopes	Vertical
(6)	Zoning	Unknown
(7)	Impervious core	Unknown
(8)	Cutoff	Unknown
(9)	Grout curtain	Unknown (foundation and spot grouting done in past)

h. Spillway

(1)	Type	Ungated and stoplog
(2)	Length of weir	42 feet (ungated); 4 feet (stoplog)
(3)	Crest elevation	250 feet NGVD (ungated); 241 feet NGVD (all stoplogs removed)
(4)	Gates	None
(5)	U/S Channel	Pawtuckaway Pond
(6)	D/S Channel	About 50 feet wide, immediately downstream appears to be bedrock, further downstream boulders; brush and tree overhang channel with fallen logs in channel.

(7)	General	Four-foot-wide steel grate access bridge over spillway.

5. DOWNSTREAM COMMUNITY INFORMATION

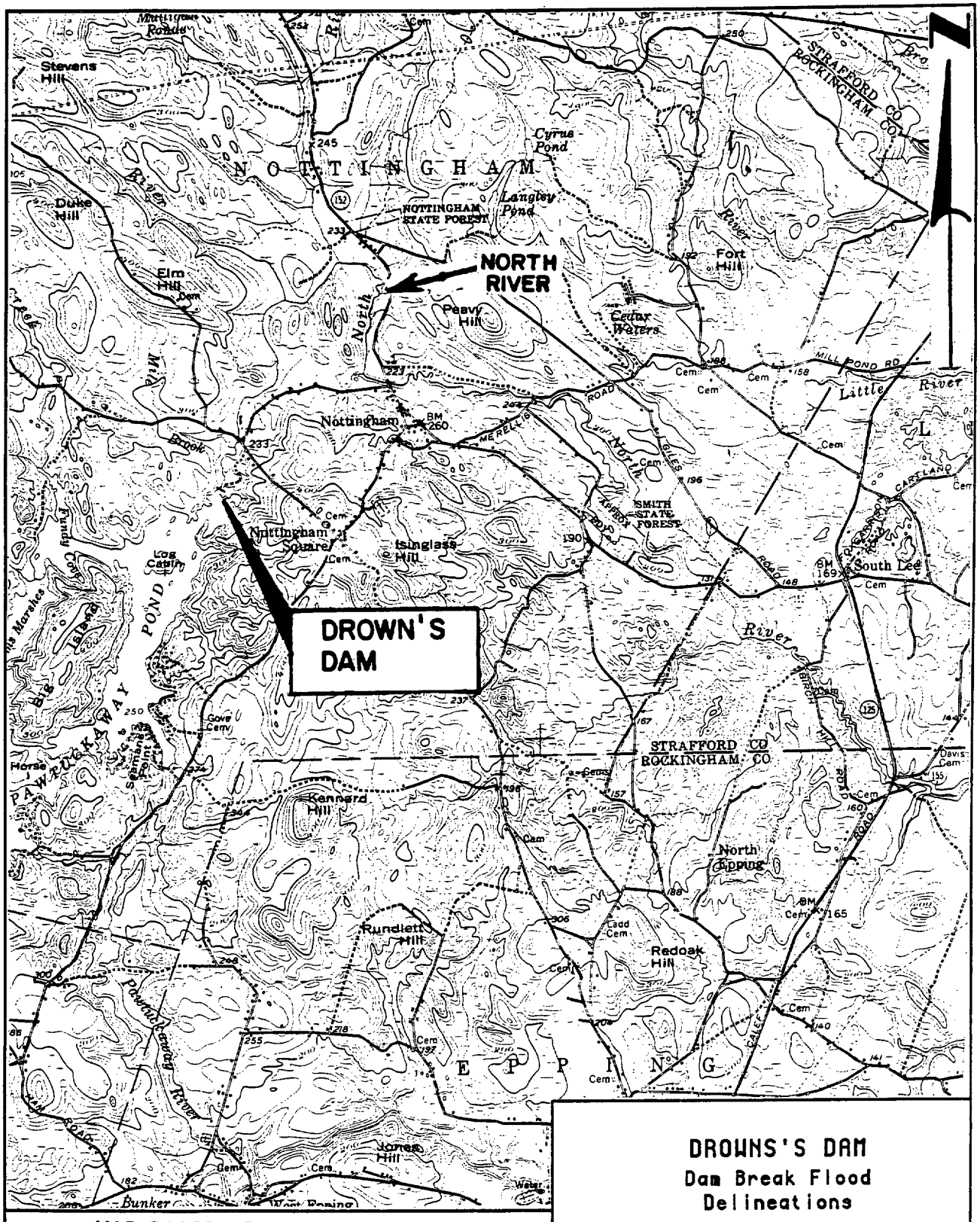
Drowns Dam is in the Town of Nottingham. Nottingham is located in Rockingham County, in southeastern New Hampshire. It is 18 miles from Exeter, and 22 miles from Portsmouth. Nottingham had a 1980 population of 1,952 persons, according to U.S. Census Bureau data, more than double that of 1970. Nottingham is a mostly residential community with some small businesses. Downstream of the Drowns Dam in Nottingham, is the Town of Lee.

6. DESCRIPTION OF INUNDATED AREAS

a. REFERENCES. The inundation map for emergency action plan (Plate 2) is developed from the September 1984, Drown's Dam Dam-Break Analysis, using enlargements of the 7.5 minute (1:24000) Epping, Mt. Pawtuckaway and Barrington Quadrangle maps as revised, by the USGS, in 1981.

b. DESCRIPTION OF IMPACTED AREA. Drown's Dam is located on Pawtuckaway Pond. Downstream of the dam, there are three bridges on Route 152 (one just across the Lee town line), one on Deerfield Street, and one on McCrillis Road, all within the probable inundation area.

The town center, near the North River, is not in the area of probable inundation. The inundation area spreads out at the North River's confluence with the Bean River, near Nottingham State Forest, but is narrow throughout most of the study area. The area downstream of the dam is rural and heavily wooded. There are less than a dozen structures which are located in the area of probable inundation.



MAP BASED UPON U.S.G.S
MT. PAWTUCKAWAY, N.H QUADRANGLE
1957 SCALE IN MILES

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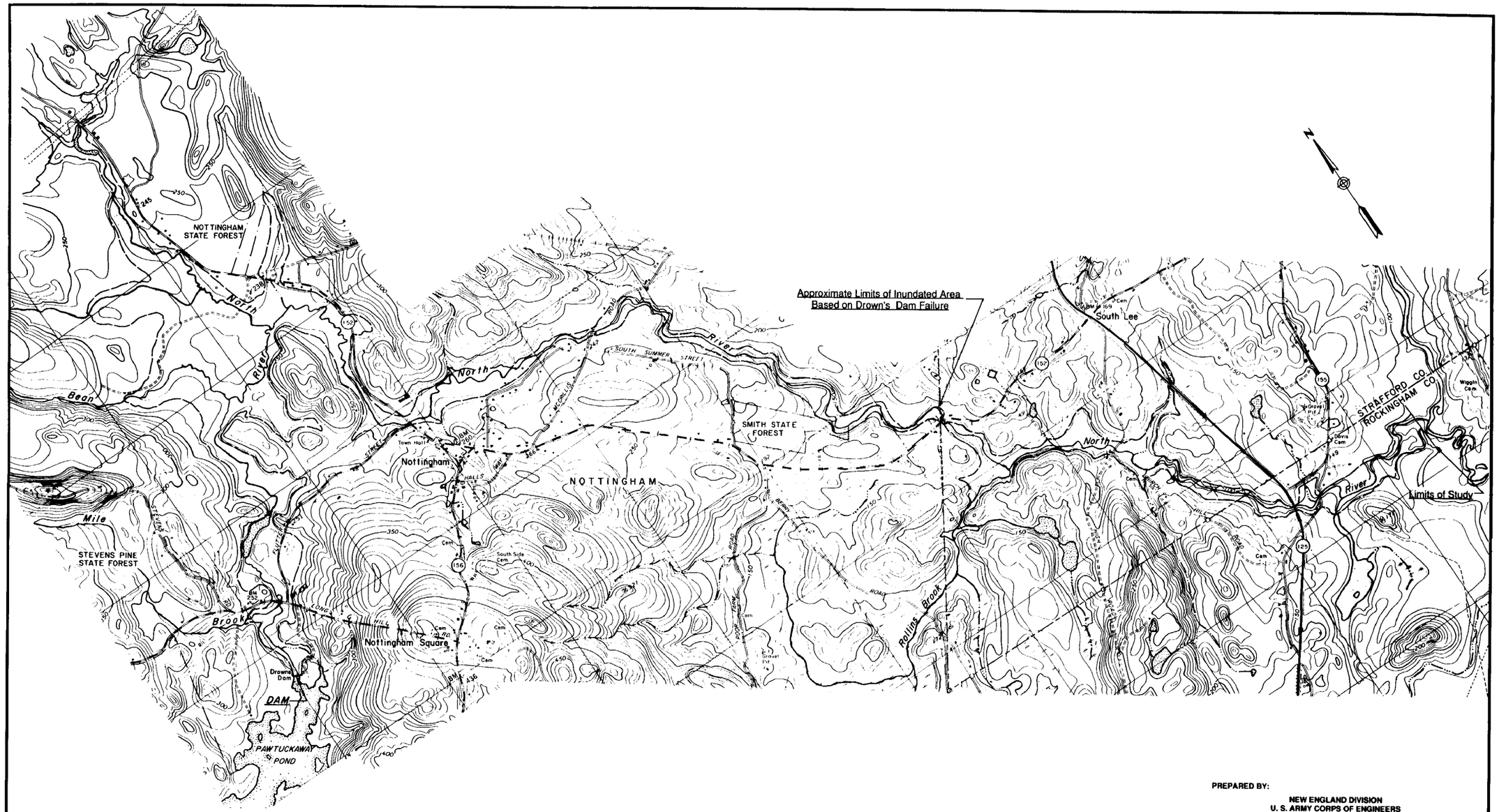
DROWNS'S DAM

Dam Break Flood Delineations

Location Map

U.S. Army Corps of Engineers

Plate 1



NOTE:

Mapping is a photograhic enlargement of the U. S. G. S. 7.5 minute (1:24,000) Epping, Mt. Pawtuckaway and Barrington Quadrangle maps, as edited in 1981.

PREPARED BY:

NEW ENGLAND DIVISION
U. S. ARMY CORPS OF ENGINEERS
WALTHAM, MASS.

FOR THE:

NEW HAMPSHIRE
WATER RESOURCES DIVISION
DEPARTMENT OF ENVIRONMENTAL SERVICES

INUNDATION MAP FOR EMERGENCY ACTION PLAN (EAP)

DROWN'S DAM
N. H. NO. 184.04

DEC. 1989

PLATE 2